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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/559,364	12/06/2005	Eberhard Piehler	3081.132US01	3619
24113 7590 07/18/2008 PATTERSON, THUENTE, SKAAR & CHRISTENSEN, P.A. 4800 IDS CENTER 80 SOUTH 8TH STREET MINNEAPOLIS, MN 55402-2100				
EXAMINER				
SEVER, ANDREW T				
ART UNIT		PAPER NUMBER		
2851				
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07/18/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/559,364

**Applicant(s)**

PIEHLER, EBERHARD

**Examiner**

ANDREW T. SEVER

**Art Unit**

2851

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 24-51 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 24-40 and 43-51 is/are rejected.
- 7) ☒ Claim(s) 41 and 42 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 December 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-85/86)
- Paper No(s)/Mail Date 12/20/05
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date: \_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the deflecting element of claim 28 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the projection screen being set up as a back projection screen in relationship to the projection device as is claimed in applicant's claim 45 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the position of the second partial

optics being variable in the direction of the optical axis as claimed in claim 49 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the projection optics comprising a shading stop having a substantially rotation-symmetrical stop aperture as claimed in applicant's claim 50 and additional stop element as claimed in claim 51 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 24-27, 29-32, and 44-46 are rejected under 35 U.S.C. 102(b) as being anticipated by Wang (US 2002/0057418.)

*With regards to applicant's claim 24:*

Wang teaches in figure 3 a projection device comprising: a reflective light modulator (part 85 of figure 3, see paragraph 15 which describes it as a DMD); a light source (part 72 of figure 3); projection optics including first (part 90 of figure 3) and second partial optics (part 101 of figure 3); wherein the light source unit, during operation of the projection device, emits an illumination ray bundle for illumination of the pixels, said illumination ray bundle passing through the first partial optics, which contain at least a first lens (part 90 of figure 3 is a lens), and then impinging on the pixels; and

Wherein the light reflected by the pixels in a first state passes, as a projection ray bundle for projection of the image onto a projection surface, through the first partial optics and then through the second partial optics, and

Wherein upon passage of the illumination ray bundle through the first partial optics, a respective reflection ray bundle is generated by the first partial optics at each optical boundary

surface of each lens of the first partial optics, said reflection ray bundle propagating up to the second partial optics without further reflection at the optical boundary surfaces; and

Wherein each optical boundary surface of each lens of the first partial optics is curved and/or arranged such that, in a reference plane in which the optical axis of the projection optics is located and which is divided by the optical axis into upper and lower half-planes, each reflection ray bundle exiting the first partial optics proceeds completely either into the first or into the second half-plane, in order to prevent the reflection ray bundles from being projected onto the projection surface.

See the description in paragraphs 17-19 which teaches that the surface (S1) is designed so that the ghost image (reflected ray bundle) is reflected to an area outside of the stop 103. Which is equivalent to applicant's claimed limitations.

*With regards to applicant's claim 25:*

Since there is only one optical boundary surface applicant's claim is met.

*With regards to applicant's claim 26:*

As is shown in figure 3 the light source unit is arranged in the claimed manner.

*With regards to applicant's claim 27:*

Part 103 is an aperture stop in the claimed position.

*With regards to applicant's claim 29:*

A field lens 90 has positive refractive power (this is its purpose.)

*With regards to applicant's claims 30-32:*

The optical system 100 intersects system 70 in a similar manner to that shown in applicant's drawings and therefore meets applicant's claim limitations.

*With regards to applicant's claim 44:*

A DMD is a tilting mirror matrix. See paragraph 15.

*With regards to applicant's claim 45:*

Wang is shown in figure 3 to projector on surface 105 which can be considered a back projection screen. (Applicant does not claim what it is back relative too, both a front or rear projection screen could be considered to be back projection screen as this is not an art recognized term.)

*With regards to applicant's claim 46:*

As shown in figure 3 the projection optics are located on a common optical axis.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wang as applied to claim 24 above, and further in view of Hayashi et al. (US 6,315,415.)

As described in more detail above Wang teaches a projection device including projection optics and a deflecting element (unlabeled element between 80 and 85 that the light after exiting 80 reflects off of towards 85 through 90 in figure 3 of Wang), however Wang does not teach that said deflecting element is arranged in said projection optics. Such a structure is taught by Hayashi in figure 1 which has a deflecting element (3) which is arranged in the projection optics (OP1). Hayashi teaches in column 4 lines 59 through column 5 line 21 that the specific element 3 taught by Hayashi has the advantage of improving illumination of the light modulator (light valve) so that it is illuminated evenly and efficiently. Accordingly it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the deflecting element of Hayashi which is disposed in the projection optics in the projection device of Wang as it will result in the light modulator being better illuminated resulting in a better projected image.

9. Claims 33-40, 43, 47, 48, 50, and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang as applied to claim 24 above, and further in view of Ohzawa (US 6,118,501.)

*With regards to applicant's claims 33-35:*

As described in more detail above Wang teaches at least a first lens and optical axis, however, Wang does not teach that the lens is offset or at a first angle (as claimed in applicant's claim 34) to the optical axis. Ohzawa teaches in figures 10 and 15 an optical system wherein both the first lens and the image plane are offset by a first and second angle respectively (as is claimed in applicant's claims 34 and 35 respectively.) As discussed in column 4 lines 14-43 of Ohzawa, by having the lens and imaging plane so arranged it reduces manufacturing cost and corrects for trapezoidal distortion and other aberrations. Accordingly it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the at least first lens and image plane of Wang tilted in the manner taught by Ohzawa as it results in a better image (less aberration) and is less costly.

*With regards to applicant's claim 36:*

The two ranges (1) and (2) outlined in column 4 lines 20-25 of Ohzawa have the first and second angles overlap and therefore they are substantially equal in at least some embodiments.

*With regards to applicant's claims 37-40:*

This is the stated purpose by Ohzawa for tilting the lenses and imaging planes and Ohzawa teaches that additional parts are tilted (see column 3 lines 64 through column 4 lines 13.) Ohzawa teaches a second lens as part of the first partial optics having surfaces S15 and S16, which is described in column 7 lines 10-17 to be at a different angle than the first lens of the first partial optics (as is claimed in applicant's claim 40, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the multiple lens system of Ohzawa in the first partial optics of Wang as this will result in the overall lens length being reduced and obtaining a compact projection system (see column 7 lines 14-17 of Ohzawa.))

*With regards to applicant's claim 43:*

As shown in figure 15 of Ohzawa and as would be understood by one of ordinary skill in the art from the teaching of Wang in view of Ohzawa the claimed limitation is met by Wang in view of Ohzawa as Wang teaches the modulator is a tilting mirror matrix which in view of Ohzawa would perform the claimed limitation.

*With regards to applicant's claims 47 and 48*

As described in column 7 lines 1-35 of Ohzawa it is desirable for the projection optics to be substantially telecentric and as much as possible be substantially centered and rotationally symmetrical as this reduces the manufacturing cost and the number of lenses necessary. Accordingly since one of ordinary skill in the art at the time the invention was made wants to reduce the complexity of the projection device and system, it would have been obvious to that

one to have the projection optics substantially centered and substantially rotationally symmetrical as well as telecentric as this would reduce the complexity (number of lenses) and cost of manufacturing.

*With regards to applicant's claim 50 and 51:*

Wang does not teach what the stop comprises of, however it is well known in the projection arts to use a diaphragm stop (see column 7 lines 3 of Ohzawa) which meets applicant's claimed limitations. Accordingly since the common type of stop is a diaphragm one of ordinary skill in the art at the time the invention was made would have used such a stop in the projection device of Wang.

10. Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wang as applied to claim 24 above, and further in view of Sugawara (US 5,926,316.)

Wang teaches a projection device which among other things includes a second partial optics, however Wang does not teach that the position of said second partial optics is variable in the direction of the optical axis. Sugawara teaches in figure 6 a projection lens comprising of first partial optics (13) and second partial optics 12), the second partial optics move in the direction of the optical axis during zoom and focus. As described in column 1 having the projection lens moveable in multiple directions allows for utilization of an optimum amount of light while producing a good focused image. Accordingly it would have been obvious to one of ordinary skill in the art at the time the invention was made to the have the second partial optics have their

position variable in the direction of the optical axis (as well as in other directions) as this would allow for better adjustment and focus of the image to result in a better projected image.

***Allowable Subject Matter***

11. Claims 41 and 42 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter: Claims 41 and 42 claim specific composition of the first lens (see claims for details) which is not taught by Wang and substantially different than that of Ohzawa. Since the prior art did not teach an obvious projection device having these characteristics along with all of the limitations of the base claims, claims 41 and 42 would be allowable if re-written in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

US 6,129,437 to Koga et al. teaches in figure 2 a projection device having first and second partial optics arranged with specific angular relations to each other (See Koga's specification for details.)

US 6,113,240 to Iizuka teaches in figure 1 a projection device having first and second partial optics whose position can be adjusted.

US 6,784,946 to Schroter et al. teaches in figure 4 a projection device that includes first and second partial optics.

US 6,439,726 to Piehler teaches in figure 2 a projection device that includes first and second partial optics.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANDREW T. SEVER whose telephone number is (571)272-2128. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on (571) 272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Andrew T Sever/ 07/17/2008  
Primary Examiner, Art Unit 2851